

How to wire a dual-fiber optical module with one transmitter and one receiver



Overview

The dual fiber optical module has two ports, TX is the transmitting port and RX is the receiving port.

Key Takeaways

Connect the transmitter (Tx) of the module to the receiver (Rx) of the other end, and the receiver (Rx) to the transmitter (Tx), ensuring proper fiber polarity and secure insertion. Understanding Fiber Polarity

In a dual-fiber setup, polarity is critical: the Tx of one module must connect to the Rx of the other module, and vice versa. If Tx is connected to Tx, or Rx to Rx, the link will not function. For duplex fiber, this is typically achieved using an A-B patch cord, which maintains the correct Tx-Rx alignment across patch panels or cable segments. The key principle is always Tx → Rx.

Connecting the Fiber

- Prepare the fiber cable: Use a simplex or duplex fiber optic cable suitable for your module. Plastic PMMA fiber is acceptable for short-range or industrial applications, while glass fiber is preferred for higher-speed or longer-distance links.
- Cut and insert the fiber: Cut the fiber end as perpendicular as possible to create a flat optical surface. Loosen the module's locking nut, insert the fiber fully into the connector, and tighten the nut finger-tight to secure it.

- Check orientation: Ensure the fiber is inserted into the correct port—Tx port of the module goes to the Rx port of the remote module, and Rx port goes to the Tx port.
- Optional Loopback Testing

For testing purposes, you can create a loopback by connecting the module's Tx directly to its own Rx using a short fiber segment. This allows you to verify the module's operation before connecting to a remote device .

Practical Tips

- Avoid bending the fiber sharply; maintain the minimum bend radius specified by the manufacturer.
- Ensure connectors are clean to prevent signal loss.
- If using SFP or GBIC modules, follow the pinout and control signals as specified in the module datasheet to avoid damage and ensure proper operation .
- Duplex modules may require careful attention to patch cord type (A-B vs. A-A) if connecting through patch panels to maintain polarity . By following these steps, you can reliably wire a dual-fiber optical module with one transmitter and one receiver, ensuring proper data transmission and minimal signal loss.

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The board has one transmitter and one receiver, so it acts as one side of a full duplex link. However, if you just want to test your

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